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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/008,987	11/02/2001	Richard W. Busser	4430-34	5846

7590 07/13/2005

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EXAMINER

TRAN, PHILIP B

ART UNIT	PAPER NUMBER
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2155

DATE MAILED: 07/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/008,987

Applicant(s)

BUSSER ET AL.

Examiner

Philip B. Tran

Art Unit

2155

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 5/12/2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 10-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Mokryn et al (Hereafter, Mokryn), U.S. Pat. No. 6,735,636.

Regarding claim 10, Mokryn teaches a method for mirroring using two controllers in a storage system, comprising making a determination related to contents of a message to be sent by a first controller to a second controller as part of a first mirroring operation; and producing said message having contents that depends on said making step wherein, when said making step determines that data to be sent is less than or equal to predetermined number of bits, said message includes metadata and when said making step determines that said data is greater than said predetermined number of bits, at least less than all said metadata associated with said first mirroring operation is

not included with said first message (= mirroring data operation using two controllers in a storage system) [see Abstract and Col. 6, Lines 22-67 and Col. 10, Line 66 to Col. 11, Line 40].

Regarding claim 11, Mokryn further teaches a method, as claimed in claim 10, further comprising sending said message to said second controller and recognizing said message by said second controller including whether said message includes said metadata [see Col. 6, Lines 22-67].

Regarding claim 12, Mokryn further teaches a method, as claimed in claim 10, wherein said message is the first message sent by said first controller to said second controller as part of said first mirroring operation [see Col. 3, Line 17 to Col. 5, Line 17].

Regarding claim 13, Mokryn further teaches a method, as claimed in claim 10, wherein said message causes a first interrupt to said second controller when said first message includes said metadata, with said first interrupt being one of three interrupts and said three interrupts being the minimum number of interrupts for said first mirroring operation [see Col. 9, Lines 6-67].

Regarding claim 14, Mokryn further teaches a method, as claimed in claim 10, wherein said first controller communicates with said second controller for said first mirroring operation using Small Computer System Interface (SCSI) protocol and said

predetermined number of bits depends on SCSI protocol operations [see Col. 14, Lines 36-51 and Col. 15, Lines 51-67].

Claim 15 is rejected under the same rationale set forth above to claim 10.

Regarding claim 16, Mokryn further teaches an apparatus, as claimed in claim 15, wherein said first message includes all metadata for said first mirroring operation and said second message includes at least less than all said metadata for said first mirroring operation and in which said one of said first message and said second message is the first communication from said first controller to said second controller for said first mirroring operation [see Col. 3, Line 17 to Col. 5, Line 17 and Col. 6, Lines 22-67].

Claim 17 is rejected under the same rationale set forth above to claim 14.

Regarding claim 18, Morkryn does not explicitly teach an apparatus, as claimed in claim 15, wherein said first message includes metadata and command related information and said first message is no greater than 128 bits. However, Skazinski, in the same field of data mirroring endeavor, discloses data mirror map is typically comprised of 128 bits [see Skazinski, Col. 19, Lines 59-64]. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the

teaching of Skazinski into the teaching of Mokryn in order to specify the size of data associated with the mirroring operation.

Regarding claim 19-20, Mokryn further teaches an apparatus, as claimed in claim 15, wherein when said second message is generated, metadata is sent to said second controller after an interrupt that is different from the interrupt associated with said second message and wherein when said first message is generated, said first mirroring operation is associated with a first number of interrupts and, when said second message is sent, said first mirroring operation is associated with a second number of interrupts, with said second number of interrupts being greater than said first number of interrupts [see Col. 9, Lines 6-67].

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-9 are rejected under 35 U.S.C 103(a) as being unpatentable over Mokryn et al (Hereafter, Mokryn), U.S. Pat. No. 6,735,636 in view of Skazinski et al (Hereafter, Skazinski), U.S. Pat. No. 6,574,709.

Regarding claim 1, Mokryn teaches a method for mirroring data using two controllers in a storage system, comprising providing a message that includes metadata by a first controller to a second controller and in which said message including said metadata, with said message being part of a first mirroring operation, and continuing with said first mirroring operation after said providing step (= mirroring data operation using two controllers in a storage system) [see Abstract and Col. 6, Lines 22-67 and Col. 10, Line 66 to Col. 11, Line 40].

Mokryn does not explicitly teach metadata size is not greater than 128 bits. However, Skazinski, in the same field of data mirroring endeavor, discloses data mirror map is typically comprised of 128 bits [see Skazinski; Col. 19, Lines 59-64]. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teaching of Skazinski into the teaching of Mokryn in order to specify the size of data associated with the mirroring operation.

Regarding claims 2-3, Mokryn does not explicitly teach a method, as claimed in claim 1, wherein said providing step includes determining that data associated with said first mirroring operation is not greater than a predetermined number of bytes and ascertaining by said first controller that said data associated with said first mirroring operation is no greater than 32 Kbytes. However, Skazinski, in the same field of data

mirroring endeavor, discloses data mirror map size as a predetermined number of bytes [see Skazinski, Col. 19, Lines 59-64]. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teaching of Skazinski into the teaching of Mokryn in order to specify the size of data associated with the mirroring operation.

Regarding claim 4, Mokryn further teaches a method, as claimed in claim 2, wherein said first controller communicates with a second controller using a Small Computer System Interface (SCSI) protocol and in which said predetermined number of bits in said message relates to said Small Computer System Interface (SCSI) protocol [see Col. 14, Lines 36-51 and Col. 15, Lines 51-67].

Regarding claims 5-6, Mokryn further teaches a method, as claimed in claim 2, wherein said continuing step includes sending said second controller a second message that includes said data and wherein said continuing step includes sending a write complete message related to completion of said first mirroring operation [see Col. 6, Lines 5-21 and Col. 13, Lines 3-13].

Regarding claim 7, Mokryn further teaches a method, as claimed in claim 1, further comprising: determining that second data associated with a second mirroring operation has a greater number of bits than a predetermined number of bits and

sending a second message to said second controller that does not include metadata [see Col. 3, Line 17 to Col. 5, Line 17 and Col. 17, Lines 17-27].

Regarding claim 8, Mokryn further teaches a method, as claimed in claim 1, wherein said message is the first message sent by said first controller to said second controller for said first mirroring operation [see Col. 6, Lines 5-21 and Col. 13, Lines 3-13 and Col. 16, Line 63 to Col. 17, Line 62].

Regarding claim 9, Mokryn further teaches a method, as claimed in claim 1, wherein said message causes a first interrupt to said second controller and the minimum number of interrupts to said second controller for said first mirroring operation is three interrupts [see Col. 9, Lines 6-67].

Other References Cited


5. The following references cited by the examiner but not relied upon are considered pertinent to applicant's disclosure.

- A) Yanaka, U.S. Pat. No. 6,467,034.
- B) Bergsten, U.S. Pat. No. 6,073,209.
- C) Kern et al, U.S. Pat. No. 6,199,074.
- D) Oldfield et al, U.S. Pat. No. 6,708,285.
- E) McKean et al, U.S. Pat. Application Pub. No. US 2002/0133735 A1.
- F) Yanai et al, U.S. Pat. No. 6,502,205.
- G) Hubis, U.S. Pat. No. 6,321,298.

6. A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS ACTION IS SET TO EXPIRE THREE MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION. FAILURE TO RESPOND WITHIN THE PERIOD FOR RESPONSE WILL CAUSE THE APPLICATION TO BECOME ABANDONED (35 U.S.C. § 133). EXTENSIONS OF TIME MAY BE OBTAINED UNDER THE PROVISIONS OF 37 CAR 1.136(A).

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Philip Tran whose telephone number is (571) 272-3991. The Group fax phone number is (571) 273-8300. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Saleh Najjar, can be reached on (571) 272-4006.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Philip B. Tran
Art Unit 2155
July 08, 2005

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